

## **REMARKS**

### **Amendments**

The specification is amended at page 25, to correct the designation of the amine polymer of Mixture M4 as a urea-formaldehyde resin, rather than Melamine-formaldehyde resin. As stated at page 16, lines 19-20, the polymer in question, UI20-E, is a commercially available urea-formaldehyde resin.

Claim 1 is amended to recite that the dielectric layer is formed from a crosslinked polymer product obtainable by crosslinking at least one organic amine derivative with itself. In addition, claim 1 is amended to incorporate the feature of claim 2. Claims 2, 10-14, 17, 19, 21, 28, 29, 33-40, and 44-47 are cancelled. Claims 3-5 and 22-24 are amended to depend from claim 1, rather than cancelled claim 2. New claims 50-56 are directed to further aspects of the invention. See, e.g., page 13, line 29 – page 14, line 1, page 16, lines 15-16, page 22, lines 27-28, and page 23, lines 1-35.

### **Rejection under 35 USC 112, first paragraph: Enablement**

Claim 1 is rejected under 35 USC 112, first paragraph, on grounds of alleged lack of enablement.

While applicants maintain their traversal of this rejection for the reasons of record, to further prosecution claim 1 is amended above to incorporate the recitation of claim 2. As claim 2 was not included in this rejection, the amendment to claim 1 renders the rejection moot. Withdrawal of the rejection is respectfully requested.

### **Rejection under 35 USC 102(b) in view of Toyoshima et al.**

Claims 1, 6, 10, 12, 17, 21, 33, 40, 42, and 45-49 are rejected as allegedly being anticipated in view of Toyoshima et al. (US 2001/0025414). This rejection is again respectfully traversed.

As noted above, claim 1 is amended to incorporate the recitation of claim 2. This rejection is not applied against claim 2. Thus, the amendment to claim 1 renders this rejection

**MERCK-2775**

moot. Withdrawal of the rejection is respectfully requested.

**Rejection under 35 USC 103(a) in view of Toyoshima et al., Knudsen et al. and Chen et al.**

Claims 2-5, 7-9, 11, 13, 14, 22-29, 38, 39, 41, 43, and 44 are rejected as allegedly being obvious in view of Toyoshima et al. (US 2001/0025414) in combination with Knudsen et al. (US 2002/0176989) and Chen et al. (US 5,330,840). This rejection is respectfully traversed.

The rejection refers to Example 1 of Toyoshima et al. In this example, a core substrate 3 is obtained by etching a copper foil. Then, a photosensitive insulating layer obtained by cationic polymerization is applied as a first insulating layer 1. The first insulating layer 1 is subjected to UV rays through a mask to obtain a first insulating pattern 11. A second insulating layer is then applied and subjected to heat treatment to diffuse reaction components from the first layer and to provide for a cross linking reaction. The non-cross linked portions are then removed.

As described in paragraph [0099], the second insulating layer is obtained from a second insulating layer solution containing 50 g of methoxymethylolmelamine (Cymel 370), 180 g pure water, 100 g of polyvinylacetal resin, and 15 g of butadiene-acrylonitrile copolymer. As indicated in the rejection, the methoxymethylolmelamine (Cymel 370) is employed here as a cross-linking agent. See also paragraph Figure 3 and paragraph [0063] which describe the use of melamine derivatives as cross-linking agents.

In the rejection, it is acknowledged that neither Toyoshima et al. nor Knudsen et al. disclose the amine crosslinking agents recited in applicants' claim 2. As noted above, claim 1 is now amended to incorporate the recitation of prior claim 2. However, it is also argued in the rejection that it would also be obvious to use Cymel 303, Cymel 380, and Cymel 385 as cross-linking agents, rather than the Cymel 370 disclosed by Toyoshima et al., in view of the disclosure of Chen et al.

Regardless, Toyoshima et al. do not disclose a dielectric layer is formed from a crosslinked polymer product that is obtainable by crosslinking at least one organic amine derivative with itself, as recited in applicants' claim 1. The polymer formed in Example 1 of Toyoshima et al. is not a polymer obtainable by crosslinking at least one organic amine derivative with itself. In the Toyoshima et al. disclosure, the melamine derivatives are used as

cross-linking agents with other materials. Neither Toyoshima et al. nor Chen et al. nor Knudsen et al. disclose a polymer obtainable by crosslinking a melamine derivative, or any other organic amine derivative, with itself.

As shown in the specification, crosslinkable amine formulations in accordance with the claimed invention exhibit advantages. At pages 24-27, five examples are provided of polymerizable amine mixtures in accordance with the invention. The mixtures are polymerizable at relatively low curing temperatures (100°C) without the use of protective gases. Conversely, PVP is susceptible to oxidation and is acidic and hygroscopic. Additionally, the resultant polymer layers were flat, hard, but not brittle, and exhibited excellent cohesion, with no evidence of pin-hole formation. Further, as can be seen from the table at page 27, the polymers exhibited suitable dielectric constants, excellent solvent exposure results, and high resistivity.

In view of the above remarks, it is respectfully submitted that Toyoshima et al. and/or Knudsen et al., taken alone or in combination with Chen et al., fail to render obvious applicants' claimed invention. Withdrawal of the rejection is respectfully requested.

**Rejection under 35 USC 103(a) in view of Toyoshima et al., Knudsen et al., Chen et al. and Baranczyk et al.**

Claims 30-32 and 34-37 are rejected as allegedly being obvious in view of Toyoshima et al. (US 2001/0025414) in combination with Knudsen et al. (US 2002/0176989), Chen et al. (US 5,330,840) and Baranczyk et al. (US 2004/0044165). This rejection is also respectfully traversed.

The disclosures of Toyoshima et al., Knudsen et al., and Chen et al. are discussed above. Baranczyk et al. is relied on in the rejection for disclosure of para-toluene sulphonic acid as a catalyst, butanol and ketones as solvents, and polyoxyethylene as a surfactant.

However, the disclosure of Baranczyk et al. does not overcome the discrepancies discussed above with respect to the combination of Toyoshima et al. or Knudsen et al. with Chen et al. Withdrawal of the rejection is respectfully requested.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

/Brion P. Heaney/  
Brion P. Heaney, Reg. No. 32,542  
Attorney for Applicant(s)

MILLEN, WHITE, ZELANO  
& BRANIGAN, P.C.  
Arlington Courthouse Plaza 1, Suite 1400  
2200 Clarendon Boulevard  
Arlington, Virginia 22201  
Telephone: (703) 243-6333  
Facsimile: (703) 243-6410

Attorney Docket No.: MERCK-2775

Date: May 22, 2009